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To: Examiner Peter Lish
Firm: Art Unit 1754
Fax No.: 703-305-6078
Comments:

From: Phillip Decker
Date: September 15, 2003
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE


In re Application of: Joanna L. Duncan,
Christopher R. McLarnon, and Francis R. Alix
Serial No.: 09/683,267
Confirmation No.: 3355
Filed: 12/06/2001
For: NOx, Hg, AND SO2 REMOVAL USING
AMMONIA

] Examiner: Peter Lish
]
] Group Art Unit: 1754
]

Commissioner for Patents
P.O. Box 1450
Arlington, VA 22313-1450

Dear Sir:

This correspondence is to supply replacement claim sheets, pages 2 - 6 of the Applicants' amendment of 8/26/2003. These replacement sheets are provided at the suggestion of the Office who advised the Applicants that the claims were not submitted in accordance with the new amendment format.


Phillip E. Decker
Attorney for Applicants

CERTIFICATE OF TRANSMISSION

I hereby certify that this correspondence is being facsimile transmitted to the Commissioner for Patents (Fax No. 703-305-6078) on September 15, 2003.

Typed or printed name of person signing this certificate: Phillip E. Decker.

Signature: 

1. (currently amended) A process for removing SO_2 , NO , and NO_2 from a gas stream comprising the steps of

- a. oxidizing at least a portion of NO in a gas stream to NO_2 with an oxidizing means resulting in a mole ratio of SO_2 to NO_2 of at least 2.5 to 1, followed by
- b. scrubbing at least a portion of SO_2 , NO , and NO_2 from the gas stream with a scrubbing solution
comprising ammonia, and
having a pH between 6 and 8, and
- c. removing at least a portion of any ammonia aerosols generated from the scrubbing
step from the gas stream with an aerosol removal means.

2. (original) The process of claim 1, wherein said oxidizing means is an electrical discharge reactor.

3. (original) The process of claim 2, wherein said electrical discharge reactor is a dielectric barrier discharge reactor.

4. (original) The process of claim 3, further comprising the step of oxidizing at least a portion of the NO to HNO_3 with said dielectric barrier discharge reactor.

5. (canceled)

6. (original) The process of claim 1, wherein said oxidizing step is adapted to result in a mole ratio of SO_2 to NO_2 of at least four to one.
7. (original) The process of claim 1, said scrubbing solution
comprising ammonia, ammonium sulfite, ammonium sulfate, and water, and
having a pH between 6 and 8.
8. (original) The process of claim 1, wherein said aerosol removal means is a wet electrostatic precipitator.
9. (original) The process of claim 1, wherein said scrubbing step results in the formation of ammonium sulfate, the process further comprising the step of withdrawing ammonium sulfate from the scrubbing solution.
10. (original) The process of claim 4, wherein said scrubbing step results in the formation of ammonium nitrate, the process further comprising the step of withdrawing ammonium nitrate from the scrubbing solution.
11. (original) A process for removing SO_2 , NO, NO_2 , and Hg from a gas stream comprising the steps of
 - a. oxidizing at least a portion of the NO in a gas stream to NO_2 , and at least a portion of the Hg in a gas stream to HgO , with an oxidizing means, followed by

- b. scrubbing at least a portion of the SO₂, NO, and NO₂ from the gas stream with a scrubbing solution
 - comprising ammonia, and
 - having a pH between 6 and 8, and
 - c. removing at least a portion of any ammonia aerosols generated from the scrubbing step, and HgO, from the gas stream with an aerosol removal means.
12. (original) The process of claim 11, wherein said oxidizing means is an electrical discharge reactor.
13. (original) The process of claim 12, wherein said electrical discharge reactor is a dielectric barrier discharge reactor.
14. (original) The process of claim 11, wherein said aerosol removal means is a wet electrostatic precipitator.
15. (original) The process of claim 11, said scrubbing solution
 - comprising ammonia, ammonium sulfite, ammonium sulfate, and water, and
 - having a pH between 6 and 8.

16. (original) The process of claim 15, wherein said scrubbing step results in the formation of ammonium sulfate, the process further comprising the step of withdrawing ammonium sulfate from the scrubbing solution.

17. (withdrawn)

18. (withdrawn)

19. (withdrawn)

20. (withdrawn)

21. (withdrawn)

22. (withdrawn)

23. (withdrawn)

24. (withdrawn)

25. (withdrawn)

26. (withdrawn)

27. (withdrawn)

28. (withdrawn)

29. (withdrawn)